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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/963,552	09/27/2001	Munekatsu Shimada	50195-27	8909

7590

04/29/2003

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EXAMINER

LE, DANG D

ART UNIT

PAPER NUMBER

2834

DATE MAILED: 04/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/963,552	Applicant(s) SHIMADA ET AL.	
	Examiner Dang D Le	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 21 February 2003 is: a) ☒ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-10 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 7, it is not clear if the applicants would like to claim the fixing portions formed in a rectangular shape or in one of substantially triangular and trapezoidal-shapes. The Figures do not show rectangular shape.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1-6 and 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Herron in view of Cuenot et al. and Saban et al.

Regarding claim 1, Herron shows a rotor structure for a permanent-magnet motor, comprising:

- An annular laminated stack of electromagnetic steel sheets (12) incorporating therein permanent magnets (18-21);
- A pair of annular end plates (14 and 15) between which the annular laminated stack is sandwiched;
- A rotor shaft (16) integrally connected to be rotatable therewith;
- Wherein each outer end surface of the annular laminated stack (12) has a plurality of first fixing portions (holes 28), and an inner surface of each of the annular end plates (14, 15) has a plurality of second fixing portions (holes 28); and
- Wherein the annular laminated stack and the annular end plates are fixedly coupled to one another by caulking (column 2, lines 57-61) at the first and second fixing portions.

Herron does not show:

- A cylindrical core buck having its outer circumferential periphery carrying thereon the annular laminated stack and the annular end plates; and
- A rotor shaft integrally connected to the cylindrical core buck;
- Wherein each outer end surface of the annular laminated stack has a plurality of first fixing portions formed in one of substantially triangular and trapezoidal-shapes, and an inner surface of each of the annular end plates has a plurality of second fixing portions formed in one of substantially triangular and trapezoidal-shapes; and
- Wherein the annular laminated stack and the annular end plates are fixedly coupled to one another by caulking at the plurality of first and second fixing portions formed in one of substantially triangular and trapezoidal-shapes.

Cuenot et al. show a cylindrical core buck (sleeve 2) having its outer circumferential periphery carrying thereon the annular laminated stack and the annular end plates and a rotor shaft (1) integrally connected to the cylindrical core buck for the purpose of reducing stress.

Saban et al. show each outer end surface of the steel sheets having a plurality of first fixing portions formed in one of substantially triangular and trapezoidal-shapes (Figures 9a-9e), and an inner surface of each of the steel sheets having a plurality of second fixing portions formed in one of substantially triangular and trapezoidal-shapes and they are fixedly coupled to one another by caulking at the plurality of first and second fixing portions formed in one of substantially triangular and trapezoidal-shapes for the purpose of interlocking the two components.

Since Herron, Cuenot et al. and Saban et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to use the core buck and to form the fixing portions as taught by Cuenot et al. and Saban et al. for the purposes discussed above.

Regarding claim 2, it is noted that Cuenot et al. also show the annular laminated stack and the annular end plates being held on the cylindrical core buck and fixed thereto by a C-ring fitted thereto.

Regarding claim 3, it is noted that Herron and Cuenot et al. also show the annular end plates and the annular laminated stack being fixed to the cylindrical core buck by caulking.

Regarding claim 4, it is noted that Herron also shows each of the annular end plates being made of non-magnetic material.

Regarding claim 5, it is noted that Cuenot et al. also show each of the annular end plates being made of stainless steel.

Regarding claim 6, it is noted that the rotor of Herron modified by Cuenot et al. and Saban et al. does not include the first fixing portions of the annular laminated stack located in a circumferential area distanced from an inner circumferential periphery of each electromagnetic steel sheet by 7 to 30 % a radial length of each electromagnetic steel sheet relative to an outer circumferential periphery thereof and at circumferentially, equally spaced positions.

However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to locate the first fixing portions of the annular laminated stack in a circumferential area distanced from an inner circumferential periphery of each electromagnetic steel sheet by 7 to 30 % a radial length of each electromagnetic steel sheet relative to an outer circumferential periphery thereof and at circumferentially, equally spaced positions, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Regarding claim 8, it is noted that Saban et al. also shows each of the second fixing portions of the annular end plate having substantially the same dimensional size as that of each of the first fixing portion of the annular laminated stack.

Regarding claim 9, it is noted that Herron also shows each of the annular end plates having an excessive marginal portion for enabling a rotating balance of the rotor.

Regarding claim 10, it is noted that Herron, Cuenot et al., and Saban et al. also show all of the limitations of claimed invention.

7. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Herron in view of Cuenot et al. and Saban et al. as applied to claim 6 above, and further in view of Yamamoto.

Regarding claim 7, the rotor of Herron modified by Cuenot et al. and Saban et al. includes all of the limitations of the claimed invention except for each of the first fixing portions of the annular laminated stack is formed in a rectangular shape on each electromagnetic sheet plate which has a side of more than 1 mm and another side of more than 2 mm, and wherein each of the first fixing portions formed in one of

substantially triangular and trapezoidal-shapes has a height equal to one to two times the thickness of each electromagnetic steel plate.

Yamamoto shows each of the first fixing portions of the annular laminated stack being formed in a rectangular shape which has a first dimensional element of more than 1 mm and a second dimensional element of more than 2 mm, with a third dimensional element of a value equal to one to two times the thickness of each electromagnetic steel plate for the purpose of reducing iron loss.

Since Herron, Cuenot et al., Saban et al. and Yamamoto are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form each of the first fixing portions of the annular laminated stack is formed in a rectangular shape on each electromagnetic sheet plate which has a side of more than 1 mm and another side of more than 2 mm, and wherein each of the first fixing portions formed in one of substantially triangular and trapezoidal-shapes has a height equal to one to two times the thickness of each electromagnetic steel plate as taught by Yamamoto for the purpose discussed above.

8. Claims 1 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the applicant's admitted of prior art (Figures 1 and 2) in view of Saban et al.

Regarding claims 1 and 10, the applicant's admitted of prior art shows rotor structure for a permanent-magnet motor, comprising:

- An annular laminated stack (2) of electromagnetic steel sheets incorporating therein permanent magnets (4);
- A pair of annular end plates (1) between which the annular laminated stack is sandwiched;
- A cylindrical core buck (3) having its outer circumferential periphery carrying thereon the annular laminated stack and the annular end plates; and
- A rotor shaft (5) integrally connected to the cylindrical core buck to be rotatable therewith.

The applicant's admitted of prior art does not show each outer end surface of the annular laminated stack having a plurality of first fixing portions formed in one of substantially triangular and trapezoidal-shapes, and an inner surface of each of the annular end plates having a plurality of second fixing portions formed in one of substantially triangular and trapezoidal-shapes; and wherein the annular laminated stack and the annular end plates are fixedly coupled to one another by caulking at the plurality of first and second fixing portions formed in one of substantially triangular and trapezoidal-shapes.

Saban et al. show (Figures 9a-9e) each outer end surface of the annular laminated stack having a plurality of first fixing portions formed in one of substantially triangular and trapezoidal-shapes, and an inner surface of each of the annular end plates having a plurality of second fixing portions formed in one of substantially triangular and trapezoidal-shapes; and wherein the annular laminated stack and the annular end plates are fixedly coupled to one another by caulking at the plurality of first

and second fixing portions formed in one of substantially triangular and trapezoidal-shapes for the purpose of making a core.

Since the applicant's admitted of prior art and Saban et al. are all from the same field of endeavor; the purpose disclosed by one inventor would have been recognized in the pertinent art of the others.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the fixing portions in one of substantially triangular and trapezoidal-shapes and couple those portions by caulking as taught by Saban et al. for the purpose discussed above.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Information on How to Contact USPTO

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dang D Le whose telephone number is (703) 305-0156. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on (703) 308-1371. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1782.

April 26, 2003

A handwritten signature in cursive script, appearing to read 'Dang D Le'.

**DANGLE
PRIMARY EXAMINER**